



# UNITED STATES PATENT AND TRADEMARK OFFICE

*cm*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,340	10/21/2003	Mikhail Godin	2102483-991310	2197

29585 7590 01/04/2007  
DLA PIPER US LLP  
153 TOWNSEND STREET  
SUITE 800  
SAN FRANCISCO, CA 94107-1957

EXAMINER
----------

ROJAS, BERNARD

ART UNIT	PAPER NUMBER
----------	--------------

2832

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/690,340

Applicant(s)

GODIN, MIKHAIL

Examiner

Bernard Rojas

Art Unit

2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24-31 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10, 13, 14, 19, 32, 34-37, 39 and 40 is/are rejected.
- 7) ☒ Claim(s) 5, 9, 11, 12, 15-18, 20-23, 33 and 38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 09/28/2006 have been fully considered but they are not persuasive.

As to the 35 USC § 112 second paragraph rejection of claims 1-10 and 14-18, Applicant has not claimed a specific load characteristic or actuator structure to provide any particular activation force.

As to claims 1, 10 and 32, Applicant states that Aoyama et al. fails to teach configuring the magnets to provide a flux density distribution selected to substantially match the load characteristics over the stroke length. Applicant has not claimed a specific load characteristic or actuator structure to provide any particular activation force which would result in a structure different from Aoyama et al., that discloses a first plurality of magnets [1] configured to provide flux density distributions in an air gap [7] as seen in figures 1 and 3.

As to claim 14-19, Applicant states that Ishiyama et al. fails to teach configuring the magnets to provide a flux density distribution selected to substantially match the load characteristics over the stroke length. Applicant has not claimed a specific load characteristic or actuator structure to provide any particular activation force that would result in a structure different from Ishiyama et al.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what actuator structure is claimed by "a flux density distribution in the air gap over the stroke length to substantially match the load characteristic over the stroke length". Applicant has not claimed a specific load characteristic. No structure has been claimed to provide any particular activation force.

Claims 14-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what actuator structure is claimed by "a flux density distribution in the air gap over the stroke length provided by the sequence [of magnets] correspond to the load characteristic over the stroke length". Applicant has not claimed a specific load characteristic. No structure has been claimed to provide any particular activation force.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4, 6-8, 10, 32, 34-37, 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoyama et al. [US 5,808,381].

Claim 1, as best understood, Aoyama et al. discloses an actuator [figures 1 and 3] for operating upon a load having load characteristics, including a field assembly [1, 3] comprising a first plurality of magnets [1] configured to provide flux density distributions in an air gap [7]; and a coil assembly [2, 4].

Claim 2, Aoyama et al. discloses the actuator of claim 1, wherein dimensions of the first plurality of magnets are selected to provide a flux density in the air gap [col. 1 lines 5-15].

Claim 3, Aoyama et al. discloses the actuator of claim 2, wherein the first plurality of magnets are aligned in alternating groups, so that magnets in one of the alternating groups have a first polarity, and magnets in an adjacent alternating group have a second polarity opposite to the first polarity [figures 1 and 3].

Claim 4, Aoyama et al. discloses the actuator of claim 2, wherein the first plurality of magnets are positioned in a first set of aligned groups on a field blank, and at least one of the aligned groups of the first set of aligned groups includes a pair of magnets having the same polarity [figures 1 and 3].

Claim 6, Aoyama et al. discloses the actuator of claim 1, wherein the field assembly includes a first field blank [3] positioned to face a second field blank, the first

and second field blanks each comprising a planar portion and additional sections which provide flux paths perpendicular to a direction of motion of the coil assembly, and further wherein the first plurality of magnets are positioned along the direction of motion on the planar portion of the first field blank [figures 1 and 3].

Claim 7, Aoyama et al. discloses the actuator of claim 6, wherein the first plurality of magnets are arranged in a first pattern of polarities, and further including a second plurality of magnets positioned on the planar portion of the second field blank to oppose the first plurality of magnets, and further wherein the second plurality of magnets are arranged in a second pattern of polarities which is a complement of the first pattern of polarities [figures 1 and 3].

Claim 8, Aoyama et al. discloses the actuator of claim 4, further including a second set of aligned groups of magnets positioned on an opposing field blank, wherein the first set of aligned groups are arranged in a first pattern of polarities, and further wherein the second set of aligned groups of magnets are arranged in a second pattern of polarities which is a complement of the first pattern of polarities [figures 1 and 3].

Claim 10, Aoyama et al. discloses a linear actuator [figure 3] for operating upon a load having load characteristics, including a field assembly [1, 3] comprising distributed magnet field sources [1] which provide a flux density distribution in an air gap [7] corresponding to the load characteristics; and a coil assembly [2, 4].

Claims 32, 34-37, 39 and 40, the method steps of configuring a linear actuator would have been necessitated by the product structure as described for claims 1-4, 6-8, and 10 previously.

Claims 14 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishiyama [US 6,040,642].

Claim 14, as best understood, Ishiyama discloses a linear actuator for operating upon a load having load characteristics, including a field assembly [figure 5] comprising a magnet structure which includes a plurality of magnets [13] arranged in a sequence so that at least two adjacent ones of the plurality of magnets having a first polarity are followed by at least another of the plurality of magnets having a polarity different from the first polarity [figure 5], and flux distributions in an air gap [7] provided by the sequence; and a coil assembly [21].

Claim 19, Ishiyama discloses a linear actuator [figures 1-2] including a field assembly comprising a first field blank [12], a first plurality of magnets of one polarity followed by a second plurality of magnets [figure 5] of a different polarity positioned on the first field blank in a direction of motion of the linear actuator, and a coil assembly [21] including a generally planar coil comprising a first force generating portion spaced apart from a second force generating portion so that the first force generating portion is positioned over ones of the first plurality of magnets whenever the second force generating portion is positioned over ones of the second plurality of magnets.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama et al. [US 5,808,381] in view of Ishiyama [US 6,040,642].

Claim 13, Aoyama et al. discloses the claimed linear actuator with the exception of the magnets being selected so that the flux density distribution in the air gap decreases in a direction of motion of the linear actuator.

Ishiyama teaches a linear actuator wherein the magnets are selected so that the flux density distribution in the air gap decreases in a direction of motion of the linear actuator [figure 8].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to alter the field strengths of the magnets used in the linear actuator as taught by Ishiyama in order to change the linear actuators response characteristics depending on the expected load.



***Allowable Subject Matter***

Claims 24-31 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 24, the prior art of record does not teach nor suggest, in the claimed combination, a linear actuator operational in a direction of motion including a plurality of field sub-assemblies each comprising a field blank, and wherein at least one of the plurality of field sub-assemblies includes a first sequence of magnets of one polarity followed in the direction of motion by a second sequence of magnets of a different polarity, wherein the plurality of field sub-assemblies are positioned with respect to one another to form a gap between the at least one of the plurality of field assemblies which includes the sequences of magnets, and another of the plurality of field assemblies; and a coil assembly including coils positioned within the gap in a plane substantially parallel to the direction of motion.

Claim 28, the prior art of record does not teach nor suggest, in the claimed combination, a linear actuator operational in a direction of motion including a plurality of field sub-assemblies each comprising a field blank, wherein a first one of the plurality of field sub-assemblies includes consecutive groups of magnets, each one of the consecutive groups of magnets including a plurality of magnets arranged to have a selected magnetic polarity and to produce a selected magnetic flux density distribution in an air gap, and further wherein the first one of the plurality of field sub-assemblies is positioned with respect to a second one of the plurality of field sub-assemblies to form the air gap between them; and a coil assembly including at least one coil positioned in a

plane within the air gap, wherein the plane is substantially parallel to the direction of motion of the linear coil actuator.

Claims 5, 9, 11, 12, 15-18, 20-23, 33 and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

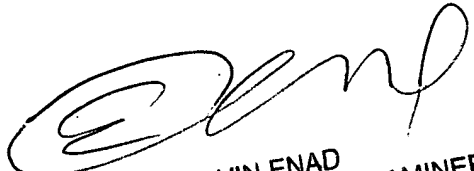
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Rojas whose telephone number is (571) 272-1998. The examiner can normally be reached on M-F 8-4:00, every other Friday off.

Art Unit: 2832

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin G. Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Br

  
ELVIN ENAD  
SUPERVISORY PATENT EXAMINER  
2206C06